

National Organic Standards Board
Crops Committee Recommendation for Guidance
Use of Compost, Vermicompost, Processed Manure, and Compost teas
Draft

Introduction

Section 205.203(c) of the soil fertility and crop nutrient management practice standard in the USDA Standard presents requirements for processing and applying plant and animal materials. Although the general scope of the Section is considered appropriate, the provisions found in 205.203(c)(1)-(3) lack clarity regarding compost, vermicompost, processed manure materials, and compost teas. Without specific guidelines, producers are more likely to process and apply such materials differently than the specifications established in Section 205.203(c). The descriptions and recommendations presented in this document provide producers and certifying agents with guidelines on allowed materials and procedures necessary for the optimum use of these materials.

Specifically, the recommendations regard the following general issues:

- 1) Allowed feedstock materials.
- 2) Required temperature elevation and maintenance procedures.
- 3) Decrease in weight, volume, and carbon to nitrogen ratio.
- 4) Increase in nutrient stability.

This document states that producers must document in their organic system plan all practices related to the fundamental conditions for making compost and compost tea. Certifying agents are responsible for verifying that the composting practices included in the plan meet the requirements stated in this document.

Background

At its Washington, DC meeting in October 2001, the National Organic Standards Board (NOSB) reviewed the provisions in the USDA Standard for processing and applying plant and animal materials. While supportive of the fundamental requirement established in Section 205.203(c), the NOSB expressed concern that the provisions in Section 205.203(c)(1)-(3) could excessively restrict the processing and application of beneficial plant and animal materials. The NOSB identified specific weaknesses in this part of the practice standard, including:

- The C:N ratio range for compost is too narrow. Quality compost can be made with C:N ratios from as low as 15:1 and up to 60:1.
- The requirement for turning compost in a windrow system five times is too prescriptive.
- The terms in-vessel, static aerated, windrow, and raw manure are not defined.
- Compost tea is not addressed.
- Vermicompost products are not addressed.
- Manures that have been heat treated to eliminate pathogenic organisms without composting are not addressed.

Section 205.203(c) of the soil fertility and crop nutrient management practice standard in the USDA Standard sets forth the fundamental requirement for processing and applying plant and animal materials. The section states, “The producer must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances”. Subsequently, Section 205.203(c) states that plant and animal materials include raw animal manure (205.203(c)(1)), compost (205.203(c)(2)), and uncomposted plant materials (205.203(c)(3)). The USDA Standard establishes that raw animal manure and uncomposted plant materials are distinct materials that, when combined and processed, yield compost. The Standard also contains management restrictions for crops on which raw manure has been applied and specifies the conditions that must be maintained to process compost. Other than the common requirement that all production practices used in organic production must maintain or improve the natural resources of the operation, including soil and water quality, the Standard does not have processing or application restrictions or conditions for using composted or uncomposted plant materials that are not mixed with animal materials.

The NOSB established the Compost Task Force (CTF) and the Compost Tea Task Force (CTTF) to clarify the parameters and requirements in the USDA Standard. This report presents recommendations based on the findings of the CTF and the CTTF.

Recommendations

In order to provide producers with a comprehensive description of materials and procedures related to compost, vermicompost, processed manure, and compost teas, the NOSB provides the recommendations presented below.

1) Regarding Compost

- a) Compost shall incorporate only allowed feedstock materials, except for incidental residues that will not lead to contamination. The primary feedstock materials for making compost must be organic matter of plant and animal origin as defined by the USDA Standard.
- b) Compost may be produced from a single material of plant or animal origin or from the combination of multiple allowed materials.
- c) The producer may add natural nonagricultural or synthetic materials, allowed in organic agriculture, to compost for a specific management purpose such as improved porosity.
- d) During composting, compost materials must achieve a recognized minimum temperature of at least 131°F (55 C) and remain there for a minimum interval of 3 days to minimize pathogens and parasites. Compost materials must be passively or actively aerated in order to ensure that all of the feedstock heats to the minimum temperature.
- e) After achieving a minimum temperature of 131°F for a minimum of 3 days, compost should cure for at least 45 days or until the producer can document that it is suitable for soil application.
- f) A producer must document in their organic system plan all management provisions or practices related to the fundamental conditions for making compost: use of allowed feedstock materials; temperature elevation and maintenance; decreases in weight, volume, and carbon to nitrogen ratio; and, increase in nutrient stability.
- g) The certifying agent must concur that the provisions in the organic system plan for making compost will fulfill the parameters for the fundamental conditions. Procedures for documenting compliance include measuring temperature, time, moisture content, chemical composition, biological activity, and particle size. These measurements may include testing feedstock materials and compost for one or more characteristics including initial and final carbon to nitrogen ratios, stability (using ammonia/nitrate ratio, O₂ demand, CO₂ rate or other standard tests), or pathogenic organisms.

2)

Regarding Vermicompost materials

- a) Feed stocks for vermicompost materials include organic matter of plant or animal origin; either a single material or mixture, preferably thoroughly macerated and mixed before processing.
- b) Permitted methods for, and duration of, vermicomposting: 1) Outdoor windrows (6-12 months); 2) Angled wedge systems (2-4 months); 3) Indoor container systems (2-4 months); and, 4) Continuous flow reactors (30-60 days).
- c) Processing must be maintained at 70-90% moisture content with temperatures maintained in the range of 65-86 degrees F. This should be achieved by monitoring temperatures regularly to regulate timing of additions of wastes and adding moisture through fine sprays as required.
- d) The final product should consist of a finely-divided material having these characteristics: an odor similar to soil; a low C:N ratio; a high microbial activity; nitrogen mostly in nitrate form; and, potassium and phosphorus in soluble forms.

3) Regarding Processed manure materials

- a) Since processed manure materials will not contribute to contamination of the soil by pathogenic organisms, they do not have to be incorporated into the soil and can be applied as a top-dress or side-dress.
- b) There is no waiting period between application of processed manure materials and harvest of the crop.
- c) Because they are highly soluble and have reduced biological activity, processed manure materials should not be used as a primary source of nutrients.

4)

Regarding Compost and teas

- a) Potable water must be used to make compost tea and for any dilution before application.
- b) Equipment used to prepare compost tea must be sanitized before use with a sanitizing agent as defined by 21 CFR 178.1010.
- c) Compost tea should be made with compliant compost or vermicompost, using the NOSB recommendation for compost and vermicompost mentioned above, and as defined in section 205.203 (c) (2) of the NOP rule. For compost tea, this applies to 100% plant feedstock materials in addition to manure feedstocks because non-manure compost feedstocks may harbor high levels of fecal bacteria.
- d) Compost tea made without compost tea additives can be applied without restriction.
- e) Compost tea made with compost tea additives can be applied without restriction if the compost tea production system (same compost batch, additives, and equipment) has been pre-tested to produce compost tea that meets the EPA recommended recreational water quality guidelines for a bacterial indicator of fecal contamination (US EPA, 2000). These indicators and the passing criteria are *Escherichia coli* (126 CFU/100ml) or enterococci (33 CFU/100ml). At least two compost tea batches must be tested using accepted methodology (APHA-AWWA-WEF, 1999; US EPA, 2000), with the average population of indicator bacteria across compost tea batches used as the measurement of passing. Each new batch of compost would require that the system quality assurance pre-test be conducted again as indicated. After it passes again, compost tea from the system can be used without restriction.
- f) If compost tea made with compost tea additives has not been pre-tested for indicator bacteria, its use on food crops is restricted to the 90/120 day pre-harvest interval. Crops not intended for human consumption, ornamental plants, and grain crops intended for human consumption are exempt from bacterial testing and 90/120 day pre-harvest interval restrictions
- g) Compost extracts - resulting from any mixture of compost, water, additives, and adjuvants that are not held for more than one hour before use - may be applied without restriction.
- h) Raw manure extracts or teas may be applied to the soil with a 90/120 day pre-harvest restriction. Foliar applications of raw manure extracts or teas are prohibited.
- i) Compost leachate may be applied to the soil with a 90/120 day pre-harvest restriction. Foliar applications of compost leachate are prohibited.
- j) Compost tea is not allowed for the production of edible seed sprouts.

Committee vote

To be determined